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Notes on the International Horticultural Congress

George H. M. Lawrence

The XIV International Horticultural Congress was held early in September of this year in the Netherlands, at The Hague's seaside resort town of Scheveningen. In the absence of adequate reports about it in the horticultural and botanical journals of this country, "Baileya" readers may be interested to learn that it was attended by 793 registrants from 76 countries. The few countries not represented included some of those of South America, Czechoslovakia, and The People's Republic of China. In addition to symposia and addresses of general interest, there were 97 individual papers presented by horticulturists and botanists of 24 countries. In contrast to the 37 Americans in attendance at the XIII Congress held in London in 1952, there were 78 Americans registered this year.

Of special interest to "Baileya" readers are the new developments relating to nomenclature and registration of cultivated plants. The International Code of Nomenclature of Cultivated Plants as adopted at the 1952 Congress was admittedly provisional in character, presented for trial and for report at the Congress recently adjourned. It was an outgrowth of an Appendix to the International Code of Botanical Nomenclature, adopted at Stockholm in 1950. It soon became clear that while it proposed to provide for all cultivated plants, it had been formulated by the horticulturists; the field crop specialists (agronomists), the seed analysts, agriculturists in general, and the foresters had not been consulted nor given opportunity either to contribute to it or to pass on its provisions. These oversights, while unintentional, are now recognized as significant. For this reason, and in an effort to correct the situation, the Scheveningen Congress voted to invite the International Union of Biological Sciences (with headquarters in Rome) to activate its International Commission for Nomenclature of Cultivated Plants, and charge it with the responsibility of studying the present code and of making recommendations resulting in its becoming acceptable to all who work with cultivated plants. It is expected that this Commission will be composed of representatives of horticulture, agriculture, and forestry. Its first meeting is to be looked for in the late Spring of 1956.

Because the entire Code will be reviewed in detail by this Commission, it was held imprudent to legislate editorial or minor changes in it at the recent Congress. In order to make it more workable, during the inevitable interim when it will remain in effect, the Congress did legislate two changes that became effective with their passage on September 6th. They are as follows:

1. In the present Code (Article C. 3, note) it is recommended that the term variety be confined to plants occurring in the wild and that the term cultivar be used for "lines, ... clones, etc., which originated or are maintained in cultivation." Since the Code was published, it has been pointed out that the term variety is incorporated in the laws of certain countries in the sense of cultivar as delimited above, and that it would not be possible for some time to alter the wording of these laws to bring them into conformance with the Code. The Congress accordingly approved the alteration of the Note to Article C. 3 to allow the use of the term variety (or its equivalent in other languages) to be retained for commercial or other non-scientific purposes until such time as the term cultivar may be incorporated into the laws concerned.

This action was taken to remove major and proper objections by persons responsible for the enforcement of state and federal seed laws in this country. It recognizes the technicality of the term variety in this usage, and treats it as synonymous with the term cultivar.

2. A recommendation was made that a clause be added to Article C. 20 of the present Code, allowing for exceptions to the provision that prohibits duplication of a cultivar name within a genus. As now emended, duplications may be allowed within genera containing two or more widely different horticultural groups of plants. For example, no one is likely to confuse an eggplant (known also as aubergine) with a potato, yet both belong in the genus Solanum. Similarly, the cultural groups represented by peaches, plums, almonds, cherries, and nectarines are individually distinct from one another, although each is a member of the genus Prunus. The existence of a plum named 'Black Jack' and of a cherry of the same name is unlikely to cause confusion; yet, until recently emended, the Code rejected such duplications.

Advances were made at this Congress in establishing more uniform procedures for registering the names of cultivars. A Code of Procedure was adopted for consideration by societies in all countries concerned with registration procedures (American originators and registrars may obtain a copy on application to the Bailey Hortorium). A selected number of organizations here and in other countries were issued invitations to set up International Registration Centers, units serving as central agencies to maintain regis-

tration records for particular groups of plants (such as the American Rose Society for Rosa, or the Royal Horticultural Society for Narcissus). Each agency operates on a world-wide basis, and in most instances with the cooperation of similar societies in other countries that function as National Registration Centers. The advantage of this is to ensure greater uniformity of procedures and of resultant nomenclature, on a world-wide basis, for each group of plants.

The groups of plants for which it is expected that International Registration Authorities will be set up during the next three years are:

Chrysanthemum (perennials only)
Delphinium
Hardy bulbs and tuberous plants (exclusive of Dahlia, Gladiolus, Lilium, and Narcissus [for which see below])
Hemerocallis
Ilex
Narcissus
Rhododendron

In anticipation of further interest in this, the Congress approved the exploration of sentiment that might result in other selected organizations being invited to set up International Registration Authorities following the next Congress. Plant groups concerned here, for which active study is now being made, are:

Acacia (mimosa of the trade)
Callistephus (China asters)
Begonia
Bromeliaceæ
Camellia
Cyclamen
Dahlia
Dianthus (carnations only)
Fruits (temperate groups only)
Fuchsia
Gesneriaceæ (excluding Saintpaulia)
Hibiscus
Hydrangea (hortensias only)
Lathyrus (sweet peas only)
Matthiola (stocks)
Primula
Saintpaulia
Vegetables

The activities and responsibilities of each International Registration Authority include the maintenance of records of all the cultivar names published for the group in question, and the publication at regular intervals (of 3-5 years) of a list of these names, with the originators, and country and date of introduction. It was pointed out, and made very clear, that registration was solely the recording of names and the records associated with them. It is not a function of a registrar to identify, or test, or evaluate the plants introduced under those names, nor is it a function of a registrar to attempt to determine whether a name submitted for registration is properly a synonym of an existing name. Such functions are matters of identification and nomenclature, but not of registration.

The Cultivated Alliums IV[1]

Harold E. Moore, Jr.

A discussion of two groups having in common the development of an open nectary in the septs of the ovary (fig. 49W, X, Z, a) concludes this survey of the cultivated alliums. For convenience these groups are referred to as the Schoenoprasum and Alliotypus alliums, the latter being distinguished from the former chiefly on the basis of the long teeth on the inner stamen-filament (fig. 49g). This arrangement may or may not represent natural relationships but it has seemed a convenient one for purposes of identification.

VI The Schoenoprasum alliums

Under the heading of Schoenoprasum alliums appear several diverse types, including some of our important economic or culinary species. The onion, Allium Cepa, its relatives from the wild, and the Welsh onion, A. fistulosum (fig. 53A), are readily recognized by their stout stems and large hollow leaves. Botanically, they are sometimes placed in sections of their own, the onion in section Cepa, the Welsh onion in section Phyllodolon. The Schoenoprasum alliums correspond in part to a major division of the genus Allium used by the monographer Eduard Regel and it is from this division rather than the earlier uses of the name that the heading has been taken. Perhaps this is an unfortunate usage from a botanical point of view, for the name Schoenoprasum cannot be maintained formally owing to its previous adoption for the group later to be discussed as Alliotypus alliums. Since Allium Schoenoprasum is a most familiar species and representative of the group it has been found convenient to use it in attempting an informal horticultural discussion.

In many ways the Schoenoprasum alliums (apart from those mentioned above) are counterparts of the Rhizirideum alliums, with the exception that they have open nectaries in the septs of the ovary and generally more slender rhizomes. Indeed, some of the rather mixed group included here have been put in section Rhizirideum. Others have been separated in small groups - A. globosum, for instance, in one section, A. hymenorrhizum, A. ochroleucum, and

[1] For previous articles of this series see "Baileya" 2: 103-113, 117-123 (1954), and 3: 137-149 (1955).

A. obliquum in another. These last four species, along with A. cæruleum, A. cæsium, A. moschatum, A. strictum, A. lineare, and A. splendens tend to be taller with less persistent leaves. They bear some resemblance to the Codonoprason alliums and fill a similar place in the planting scheme.

For the most part, however, the important alliums listed here are species that form dense clumps with the leaves remaining green throughout most of the growing season. They are seldom tall species, often delicately colored and useful in the rock garden. Most favored for the latter are the blue- or blue-violet-flowered A. Beesianum, A. Thunbergii, A. cyaneum, A. kansuense, A. sikkimense, and the white or pink A. Mairei.

Our garden chives, Allium Schoenoprasum, is familiar to many kitchen gardeners for its piquant leaves. The shiny, deep pink flowers make it ornamental as well. In the Bailey Hortorium garden it has appeared many times over when seeds supposedly of rare or unusual species have been planted. Another species of culinary value probably belonging here is A. ascalonicum, the shallot. It rarely flowers and is omitted from the key for lack of certainty as to the presence of nectaries.

Key to the cultivated Schoenoprasum alliums

1. Scape stout, 7 to 20 mm. thick or more; leaves hollow and large (fig. 53A).
   2. Bulb wider than the neck; perianth-segments 4 to 6 mm. long, white when dry; pedicels with tiny bracteoles at their base; inner stamen-filaments broadened at the base, usually lobed or toothed on either side.
      3. Scape hollow, with a distinct inflation above the middle; stamen-filaments free above the point of union with the perianth; leaves 4 to 9. . . . . A. Cepa
      3. Scape solid, not inflated; stamen-filaments more or less united with each other above the point of union with the perianth; leaves 2 or 3. . . . . A. galanthum
   2. Bulb little wider than the neck; perianth-segments 6 to 8 mm. long, yellowish when dry; pedicels with bracteoles; inner stamen-filaments broadened but entire at the base (fig. 53Ad).
      4. Pedicels thick, slightly shorter than (or the central to 1 1/2 times) the perianth; umbel very compact and nearly capitate. . . . A. altaicum
      4. Pedicels slender, 2 to 3 times as long as the perianth; umbel loose. . . . . A. fistulosum
1. Scape slender, less than 6 mm. thick; leaves slender if hollow.
   5. Bulb-tunics membranous (fig. 53Bb).
      6. Perianth-segments 3 to 4 or more times as long as broad, acuminate, shining, papery, usually enclosing the capsule in fruit, the flowers narrowly campanulate.
         7. Stamen-filaments united with one another above the point of union with the perianth. . . . . A. monadelphum

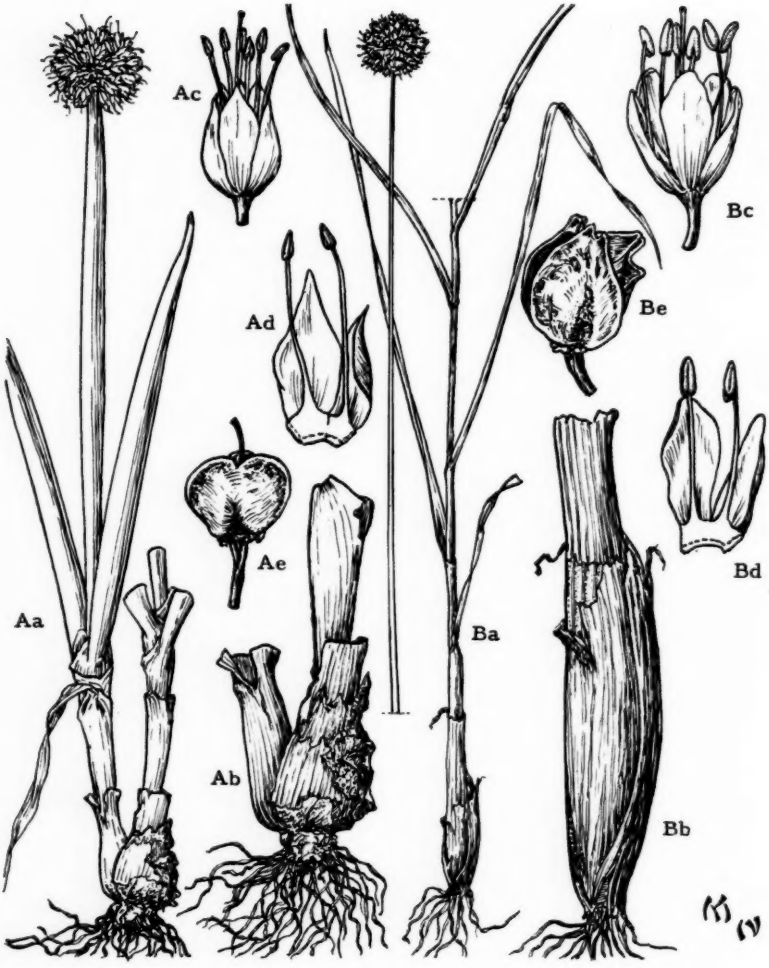

Fig. 53. A, Allium fistulosum: a, habit x 1/4; b, bulb x 1/2; c, flower x 2; d, stamens and perianth-segments x 3; e, fruit x 4. B, Allium hymenorrhizum: a, habit x 1/4; b, bulb x 1; c, flower x 4; d, stamens and perianth-segments x 5; e, fruit x 6.

7. Stamen-filaments free above the point of union with the perianth.

8. Pedicels shorter than the flowers; style included. . . . . A. Schoenoprasum

8. Pedicels 1 1/2 to several times as long as the flowers; style exserted. . . . . A. Ledebourianum

6. Perianth-segments scarcely more than twice as long as broad, obtuse to acute, not shining, membranous, withering in age, the flowers open-campanulate to nearly star-shaped.

9. Flowers blue.

10. Inner stamen-filaments entire or shortly toothed below the middle; leaves three-angled. . . . . A. cæruleum

10. Inner stamen-filaments bidentate at the middle or above, the teeth prominent; leaves semicylindric. . . . . A. cæsium

9. Flowers pink or yellowish-green.

11. Spathe beaked, equalling or exceeding the umbel; pedicels shorter than to 1 1/2 times as long as the flowers. . . . A. globosum

11. Spathe not beaked, shorter than the umbel; pedicels more than twice as long as the flowers.

12. Flowers pink or rose. . . . . A. hymenorrhizum

12. Flowers yellow-green.

13. Leaves linear, 1.5 to 6 mm. wide, mostly basal or low-sheathing; scape low, to 35 cm. high or rarely to 60 cm. . . . . A. ochroleucum

13. Leaves lanceolate, strongly tapered to the tip, sheathing the scape about 1/3 its length, 5 to 20 mm. wide; scape robust, 60 to 100 cm. high or more. . . . A. obliquum

5. Bulb-tunics fibrous-reticulate or, if obscurely so, then the bulbs slender, densely cæspitose with ropy roots (fig. 54Ab).

14. Bulbs very slender, densely cæspitose with ropy roots; flowers blue or rarely (in A. Mairei) pink or white, usually nodding.

15. Flowers white or white with pink spots, 1 cm. long; stamens included; umbel few-flowered. . . . . A. Mairei

15. Flowers blue or blue-violet.

16. Perianth-segments 12 mm. long or more. . . . . A. Beesianum

16. Perianth-segments 8 mm. long or less.

17. Stamens exserted.

18. Inner stamen-filaments entire. . . . . A. Thunbergii

18. Inner stamen-filaments usually toothed at the base (fig. 54Ae). . . . . A. cyaneum

17. Stamens included.

19. Filaments of all stamens toothed at base. . . A. kansuense

19. Filaments of only inner stamens toothed. . . . . A. sikkimense

14. Bulbs subglobose to slender but robust, the roots fibrous; flowers pink or white, usually considerably shorter than the pedicels.

20. Inner stamen-filaments the same width as the outer, entire. . . . . A. moschatum

20. Inner stamen-filaments twice as wide as the outer, with 2 teeth at the base.

    21. Perianth-segments with a conspicuous and deeply colored nerve. . . . . A. splendens

    21. Perianth-segments uniform in color.

        22. Stamen-filaments 1 1/2 to 2 times as long as the perianth-segments; leaves 1 to 3 mm. wide, hispid or smooth on the margin; stigma scarcely thickened. . . . . A. lineare

        22. Stamen-filaments 1 to 1 1/2 times as long as the segments; leaves 3 to 5 mm. wide, scabrid on the margins; stigma nearly capitate. . . . . A. strictum

VII The Alliotypus Alliums

The rather small group of alliums currently placed in section Alliotypus, but perhaps more generally known as section Porrum, is well marked by the peculiar elongation of the teeth on the inner stamen-filaments. These are slender and longer than the filament bearing the anther (fig. 54Be). Some species, such as A. ampeloprasum, the wild relative of the leek, A. Heldreichii, A. margaritaceum, A. rotundum (fig. 54B), and A. sphærocephalon, are grown chiefly as ornamentals. Others are culinary herbs: the garlic, A. sativum; the leek, A. Porrum. Allium vineale or crow-garlic, though sometimes intentionally planted, is notorious as a pestiferous weed. Allium Scorodoprasum and its variety controversum or serpent-garlic may be grown as curiosities. Allium pyrenaicum is included because it is not known whether it is actually cultivated or whether the name has appeared due to error in the interpretation of a nomenclatural matter.

A few other alliums, such as the blue-flowered A. cæruleum, A. cæsium, and A. cyaneum of Group VI, have teeth on the stamen-filaments. There, however, the teeth are shorter than the central portion of the filament or they appear at the base of the filament.

Key to the cultivated Alliotypus alliums

1. Umbels bulbiliferous.

    2. Leaves terete, hollow; stamens longer than the perianth. . . . . A. vineale

    2. Leaves flat, linear-lanceolate; stamens included.

        3. Flowers deep purple; spathe shorter than the flowers; bulb not divided; outer perianth-segments denticulate along the nerves. . . . . A. Scorodoprasum

        3. Flowers white to pink; spathe beaked and longer than the flowers; bulb consisting of several segments in the membranous coat; perianth-segments smooth. . . . . A. sativum

1. Umbels without bulbils.

    4. Leaves semi-terete, hollow, narrow.

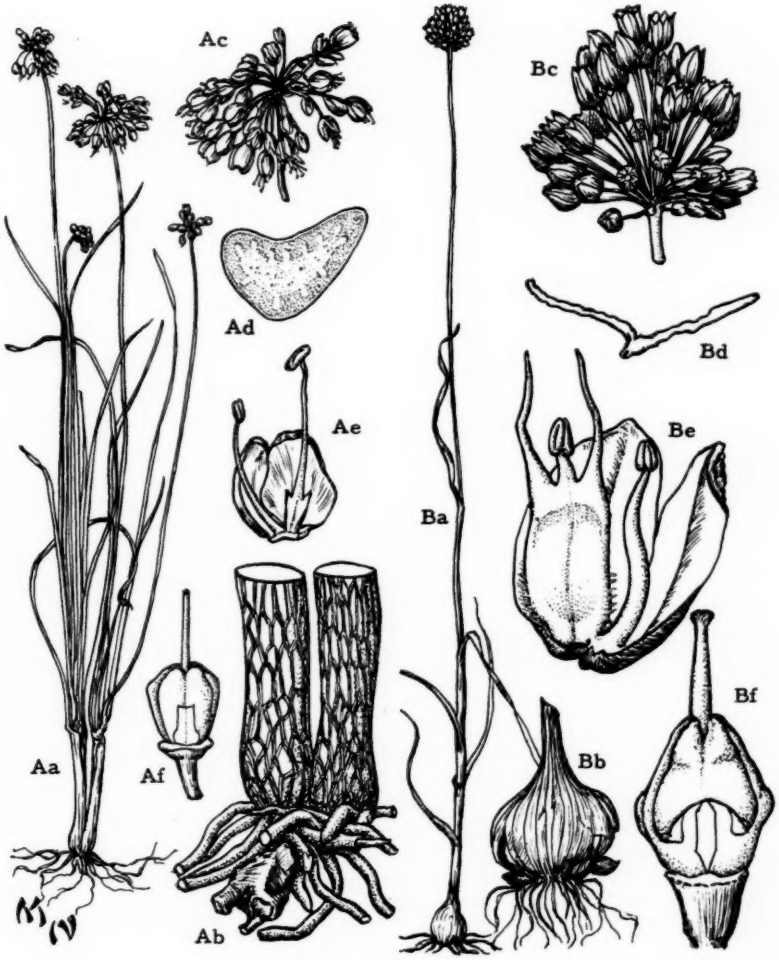

Fig. 54. A, Allium cyaneum: a, habit x 2/5; b, bulbs x 3; c, umbel x 1; d, cross-section of leaf x 16; e, stamens and perianth-segments x 4; f, pistil x 6. B, Allium rotundum: a, habit x 1/5; b, bulb x 1 3/5; c, umbel x 1 1/5; d, cross-section of leaf x 8; e, stamens and perianth-segments x 5; f, pistil x 8.

5. Flowers white; pedicels of outer flowers 2 to 3 times as long as the perianth-segments, those of the inner much longer. . . . A. margaritaceum

5. Flowers rose or red.

6. Pedicels of outer flowers shorter than to as long as the perianth-segments, those of the inner 2 to 3 times as long. . . A. sphærocephalon

6. Pedicels of flowers equal. . . . . A. Heldreichii

4. Leaves flat and keeled, up to 12 mm. wide.

7. Bulblets and envelopes of new bulbs blackish or dark. . . . . A. rotundum

7. Bulblets and envelopes of new bulbs yellowish.

8. Pedicels about twice as long as the white flowers; perianth-segments long-pointed; stamens included. . . . . A. pyrenaicum

8. Pedicels 3 or more times as long as the white or pinkish flowers; perianth segments acute to obtuse; stamens exserted.

9. Perennial; the scape ascending laterally or from between two bulbs in a common tunic. . . . . A. Ampeloprasum

9. Annual or biennial; scape a continuation of the solitary elongate bulb. . . . . A. Porrum

In the interval between publication of the first and last parts of these notes on cultivated alliums, Mr. W. T. Stearn of the British Museum of Natural History has written an account of a choice species, A. Farreri, in "Curtis's Botanical Magazine" 170: t. 252 (1955). Mr. Stearn's studies have led him to consider Allium Farreri a variety of Allium cyathophorum described by Bureau and Franchet in 1891. The variety differs in its lanceolate rather than elliptic-oblong perianth-segments with acuminate rather than subobtuse tips. Although earlier considered a species in "Baileya" 2: 117 (1954) [1955], A. Farreri is referred to A. cyathophorum in the following finding list and in manuscript for "Hortus III."

Valid names in this list are underscored; synonyms and names without botanical standing are not.

Finding List of Alliums Reported to be in Cultivation

acuminatum Hooker
acutangulum Schrader :: angulosum
aflatunense B. Fedtschenko
albidum Fischer ex Besser :: denudatum
albopilosum C. H. Wright :: Christophii
albopurpureum: listed name without botanical standing
album Santi :: neapolitanum
alleghaniense Small :: cernuum
altaicum Pallas
altissimum Regel
ammophilum Heuffel :: flavescens
Ampeloprasum Linnæus
amplectans Torrey
angulosum Linnæus

angustoprasum: listed name without botanical standing
anisopodium Ledebour
ascalonicum Linnæus
Aschersonianum W. Barbey
atropurpureum Waldstein & Kitaibel
atrorubens S. Watson
azureum Ledebour :: cæruleum
Beesianum W. W. Smith
Bidwelliæ S. Watson :: campanulatum
bisceptrum S. Watson
Bolanderi S. Watson
Bolanderi var. stenanthum (Drew) Jepson
brevistylum S. Watson
Breweri S. Watson
bulgaricum :: Nectaroscordum bulgaricum
Bulleyanum Diels
Burbankii: listed name of no botanical standing
cæruleum Pallas
cæruleum var. bulbilliferum (Schrenk) Ledebour
cæsium Schrenk
campanulatum S. Watson
canadense Linnæus
canadense var. canadense
canadense var. Fraseri Ownbey
canadense var. mobilense (Regel) Ownbey
carinatum Linnæus
Cepa Linnæus
Cepa var. aggregatum Don
Cepa var. bulbelliferum Bailey :: var. viviparum
Cepa var. multiplicans Bailey :: var. aggregatum
Cepa var. solaninum Alefeld :: var. aggregatum
Cepa var. viviparum Metz
cernuum Roth
Chamæmoly Linnæus
Christophii Trautvetter
ciliatum Cyrillo :: subhirsutum
cinereum: listed name without botanical standing
controversum Schrader :: sativum var. controversum
Coryi M. E. Jones
Cowanii Lindley :: neapolitanum
crenulatum Wiegand
crispum Greene :: peninsulare var. crispum
Cusickii S. Watson :: Tolmiei
cuspidatum Fernald :: acuminatum
Cuthbertii Small
cyaneum Regel
cyathophorum Bureau & Franchet var. Farreri (Stearn) Stearn
Cyrillii Tenore

darwasicum Regel
Delavayi: listed name without botanical standing
denudatum Redouté
deserticola (Jones) Wooton & Standley :: macropetalum
dichlamydeum Greene
Douglasii Hooker
Drummondii Regel
elatum Regel
falcatum: listed name without botanical standing
falcifolium Hooker & Arnott
fallax Roemer & Schultes filius :: senescens
Farreri Stearn :: cyathophorum var. Farreri (Stearn) Stearn
fibrillum M. E. Jones
fibrosum Rydberg :: rubrum
fimbriatum S. Watson
fistulosum Linnæus
flavescens Besser
flavum Linnæus
frigidum Boissier & Heldreich
galanthum Karelin & Kirilov
Geyeri S. Watson
giganteum Regel
glaucum Schrader :: senescens
globosum Bieberstein ex Redouté
hæmatochiton S. Watson
Heldreichii Boissier
Helleri Small :: Drummondii
Huteri: listed name of no botanical standing
hymenorrhizum Ledebour
insubricum Boissier & Reuter
japonicum Regel :: Thunbergii
kansuense Regel
karataviense Regel
Kochii Lange :: vineale var. Kochii
Kunthii Don
lacunosum S. Watson
Ledebourianum Roemer & Schultes filius
Lemmonii S. Watson
libanii Boissier
lineare Linnæus
macranthum Baker
macropetalum Rydberg
Mairei Leveillé
margaritaceum Sibthorp & Smith
maritimum :: Muilla maritima
Mnukii: listed name without botanical standing
mobilense Regel :: canadense var. mobilense
Moly Linnæus

monadelphum Lessing ex Kunth
montanum F. W. Schmidt :: senescens
moschatum Linnæus
multibulbosum Jacquin :: nigrum
mutabile Michaux :: canadense var. canadense
nanhoense: listed name without botanical standing
narcissiflorum Villars
neapolitanum Cyrillo
Nevii S. Watson
nigrum Linnæus
nutans Linnæus
Nuttallii S. Watson :: Drummondii
obliquum Linnæus
ochroleucum Waldstein & Kitaibel
odorum Linnæus :: ramosum
oleraceum Linnæus
oreophilum Meyer
Ostrowskianum Regel
oxyphilum Wherry :: cernuum
pallens: name of mixed application
paniculatum Linnæus
Parishii S. Watson
pedemontanum Willdenow :: narcissiflorum
peltatum: listed name without botanical standing
peninsulare Lemmon
peninsulare var. crispum (Greene) Jepson
perdulce S. V. Fraser
pikeanum Rydberg :: Geyeri
pilosum Sibthorp & Smith
platycaule S. Watson
Porrum Linnæus
præcox Brandegee
prairiense: listed name without botanical standing
Przewalskianum Regel
pulchellum Don
Purdomii W. W. Smith :: cyaneum
Purdyi Eastwood
pyrenaicum Costa & Vayreda
ramosum Linnæus
recurvatum Rydberg :: cernuum
reticulatum Fraser ex Don :: textile
Rosenbachianum Regel
roseum Linnæus
roseum var. bulbilliferum Visiani
rotundum Linnæus
rubens Schrader ex Willdenow
rubrum Osterhout
Rydbergii Macbride :: rubrum
sativum Linnæus
sativum var. controversum (Schrader) Regel

scaposum Bentham :: Kunthii
Schoenoprasum Linnæus
Schoenoprasum var. orientale Regel
Schoenoprasum var. sibiricum (Linnæus) Hartman
Schubertii Zuccarini
scilloides Douglas
Scorodoprasum Linnæus
senescens Linnæus
serratum S. Watson
sibiricum Linnæus :: Schoenoprasum var. sibiricum
siculum :: Nectaroscordum siculum
sikkimense Baker
sitchense: listed name without botanical standing
speciosum Cyrillo :: nigrum
sphærocephalon Linnæus
splendens Willdenow ex Roemer & Schultes filius
stellatum Ker
Stellerianum Willdenow
stenanthum Drew :: Bolanderi var. stenanthum
stipitatum Regel
striatum :: Nothoscordum bivalve
strictum Schrader
subangulatum Regel
subhirsutum Linnæus
subroseum: listed name without botanical standing
tanguticum Regel
tartaricum Linnæus filius :: ramosum
tenuissimum Linnæus
textile A. Nelson & Macbride
Thunbergii G. Don
tibeticum Rendle
Tolmiei Baker
tricoccum Aiton
triquetrum Linnæus
tuberosum Rottler ex Sprengel
unifolium Kellogg
urceolatum Regel :: cæsium
ursinum Linnæus
validum S. Watson
vancouverense: listed name without botanical standing
Victorialis Linnæus
vineale Linnæus
vineale var. Kochii (Lange) Richter
viviparum Karelin & Kirilov :: cæruleum var. bulbilliferum
Wallichianum Steudel
Wallichii Kunth :: Wallichianum
Winklerianum Regel
yunnanense Diels :: Mairei
zebdanense Boissier & Noe
Zenobiæ Cory

To give a proper accounting of the cultivated alliums would require much more space than has been devoted to them here. Several articles by Mr. W. T. Stearn in "Herbertia" are recommended to the fancier. Growers of western alliums will find illustrations and accounts of them in Abrams' "Illustrated Flora of the Pacific States" and in various papers by Dr. Marion Ownbey. For the horticulturist wishing more detailed information the following selected titles are suggested as sources.

Abrams, L., Illustrated Flora of the Pacific States 1: 380-396 (1940).

Boissier, E., Flora Orientalis 5: 229-285 (1882).

Feinbrunn, N., Allium Sectio Porrum of Palestine and the Neighboring Countries, Palestine Journal of Botany, Jerusalem, Series 3: 1-21 (1943).

Feinbrunn, N., Further Studies on Allium of Palestine and the Neighboring Countries, Palestine Journal of Botany, Jerusalem, Series 4: 144-157 (1948).

Hayek, A., Prodromus Florae Peninsulae Balcanicae 3: 39-60 (1932).

de Janka, V., Key to the Alliums of Europe (translated by W. T. Stearn), Herbertia 11: 219-225 (1944) [1946].

Ownbey, M., The Genus Allium in Arizona, Research Studies of the State College of Washington 15: 211-232 (1947).

Ownbey, M., The Genus Allium in Idaho, Research Studies of the State College of Washington 18: 3-39 (1950).

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Regel, E., Alliorum adhuc cognitorum Monographiae, Acta Horti Petropolitani 3: 1-266 (1875).

Regel, E., Allii Species Asiae Centralis, Acta Horti Petropolitani 10: 278-362 (1887).

Stearn, W. T., Notes on the Genus Allium in the Old World, Herbertia 11: 11-34 (1944) [1946].

Stearn, W. T., The Floristic Regions of the U.S.S.R. with Reference to the Genus Allium, Herbertia 11: 45-63 (1944) [1946].

Stearn, W. T., Nomenclature and Synonymy of Allium odorum and A. tuberosum, Herbertia 11: 227-245 (1944) [1946].

Vvedensky, A. I., The Genus Allium in the USSR (translated by H. K. Airy Shaw), Herbertia 11: 65-218 (1944) [1946].

American readers of "Baileya" may procure copies of the International Code of Nomenclature for Cultivated Plants from Dr. Donald Wyman, Sec'y. American Horticultural Council, Arnold Arboretum, Jamaica Plain, Mass. Price: $0.25 a copy.

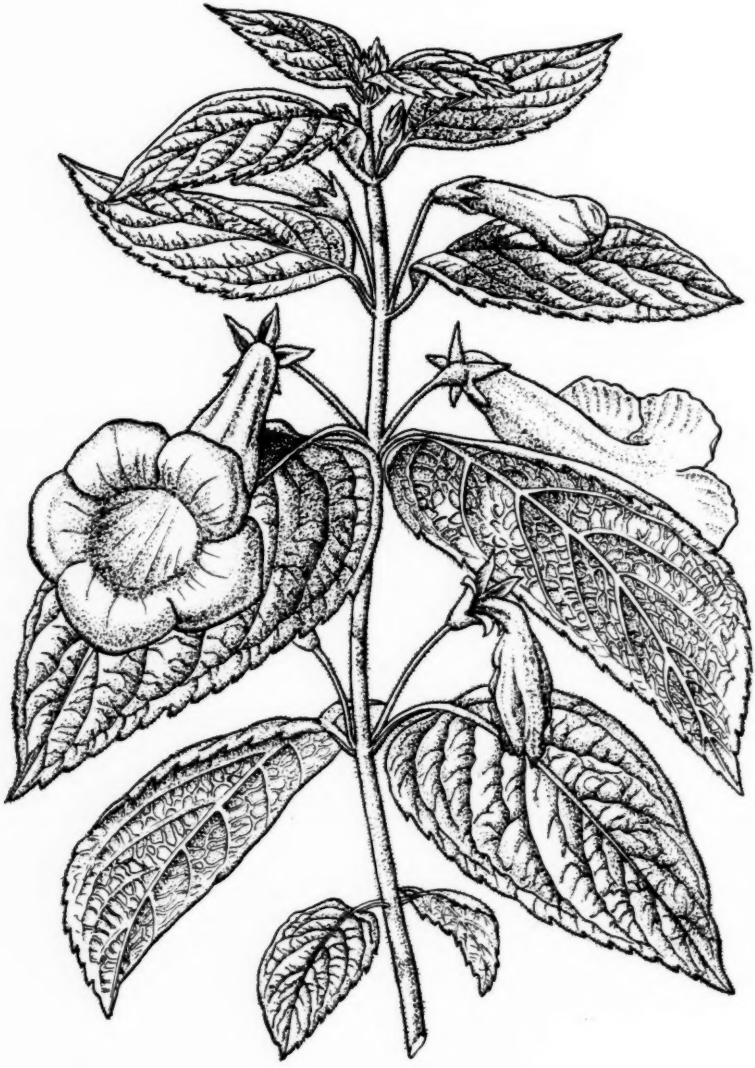

Fig. 55. Achimenes mexicana. Adapted from the illustration of Shuria mexicana in L'Horticulteur Français II, 2: plate XIII (1851).

Achimenes mexicana

Paul Arnold
Binghamton, New York

A recent study of dealers' catalogs for the period from 1951 to 1955 has shown that 18 located in the United States and India list an Achimenes cultivar 'Mexicana'. It might be expected that this clone is the species A. mexicana (Seemann) Fritsch, or a plant related to it. Unfortunately, from the standpoint of horticultural nomenclature, this is not the case. The plant listed as cv. 'Mexicana' is not like the species of that same name but instead is a clone of a specifically different plant, Achimenes longiflora. It may even be the species A. longiflora De Candolle itself, for it resembles closely the first published picture of A. longiflora in "Curtis's Botanical Magazine" 69: plate 3980 (1843). Ironically, most of these 18 dealers have the real A. mexicana in their lists, but under another name.

Through the activities of the Nomenclature and Registration Committee of the American Gesneria Society, this situation has received attention during the past few months. One dealer in the United States, when apprised of the situation, has renamed the A. longiflora clone in his lists 'Montezuma' and has transferred the name A. mexicana correctly to the clone he formerly called 'Stormcloud' or 'Brown's Lavender'. Another 1955 list designates the clone as a cultivar, A. longiflora 'Mexicana'.

Synonymy of the true A. mexicana may be summarized as follows:

Achimenes mexicana (Seemann) Bentham and Hooker filius ex Fritsch, in Engler & Prantl, Die Natürlichen Pflanzenfamilien 4(3b): 174 (1894). Not Achimenes cv. 'Mexicana', which is an A. longiflora clone listed by several dealers in the United States, 1949 to 1955.

Scheeria mexicana Seemann, in Curtis's Botanical Magazine 79: pl. 4743 (1853).

Scheeria mexicana α. purpurea Seemann, l. c.

Scheeria mexicana β. cærulescens Seemann, l. c.

Mandirola mexicana (Seemann) Planchon, in Flore des Serres 10: 49 (1854).

Mandirola Seemannii Lemaire, L'Illustration Horticole 3: sub pl. 80 (1856), in synonymy.

Shuria mexicana Hort. ex Larinkse, in L'Horticulteur Français II, 2: 159 (1861).

Achimenes Scheerii Hemsley, in Godman and Salvin, Biologia Centrali-Americana (Botany) 2: 476 (1882); Hort. ex Hooker filius, in Curtis's Botanical Magazine 79: sub pl. 4743 (1853), in synonymy.

Achimenes Chirita Hort. ex Siebert and Voss, in Vilmorin's Blumengartnerei, ed. 3, 1: 792 (1894), in synonymy; Hort. ex Corrêa, Diccionario das Plantas Uteis do Brasil 1: 373 (1926), in syn.; Harrison, in Floricultural Cabinet 21: 198 (1853) [?].

Scheeria cærulescens Hort. ex Bailey, Cyclopedia of American Horticulture 1623 (1902), and Standard Cyclopedia of Horticulture 3108 (1917), in synonymy.

Achimenes cv. 'Lavender Queen', Smith, in Plant Life 5: 20 (1949).

Achimenes cv. 'Stormcloud', Roblin Catalog 1951.

Achimenes cv. 'Brown's Lavender', Hayward Catalog 1952-53, p. 4.

Achimenes cv. 'Lavender Beauty', Rockwell and Grayson, Complete Book of Bulbs 281 (1953).

Of the two variations mentioned by Seemann, the plant currently in the trade more closely resembles variety [α] purpurea. It agrees quite well with the earliest descriptions and illustrations in the literature of the plant which Seemann accepted as the prototype.

This Achimenes mexicana has distinctive characteristics when compared with most other commercial sorts. The Belgian nurseryman Louis Van Houtte in 1853 called it Achimenes Chirita because its flowers were "very similar to those of the Chirita Moonii" and because they exceeded in size any other Achimenes in his collection at Ghent. Dr. B. Y. Morrison, in the "National Horticultural Magazine" 28: 37 (1949), was so impressed by the size and appearance of the plant that he wrote, "This may not be an Achimenes at all."

The name 'Stormcloud' has been traced back to Mrs. Lulu Roblin, a grower in Hazlehurst, Mississippi, but it is not clear whether she first assigned the name or only passed it on. Wyndham Hayward, in Winter Park, Florida, distributed the plant under the name 'Brown's Lavender' for several years, because he obtained it from Brown's Bulb Ranch in Capitola, California. The 'Lavender Lady', 'Lavender Beauty' designations seem to have arisen as variations on 'Lavender Queen' but the origin of that name has not yet been determined.

Berthold Seemann founded the genus Scheeria on A. mexicana in compliment to Frederick Scheer who received the plant in Europe in 1850 through J. Potts, Esq., from Chihauhua, Mexico. Seemann separated it from Achimenes because the stigma was mouth-shaped, as in Sinningia, rather than twin-lobed. Karl Fritsch, in his classic treatment of the Gesneriaceæ in Engler and Prantl's "Die Natürlichen Pflanzenfamilien," included Scheeria as one of the eight sections into which he divided the genus Achimenes. Later authors have been content to abide by his classification.

Both the flower and the leaf of A. mexicana have a velvety appearance and the former shows kinship with A. Ehrenbergii. The large flowers are borne singly in the axils but in fair numbers; however, the blooming season is rather short. The compact habit of the plant and its beautiful appearance when in bloom are enough to make it one of the popular types today.

Technical Name for the Polyantha Rose

Lloyd H. Shinners
Southern Methodist University

Rosa × Rehderi Shinners, nom. nov. (R. chinensis Jacq. × R. multiflora Thunb.) Frutex humilis. Stipulæ pinnatisectæ, ad R. multifloram spectantes. Flores plures corymbosi eis R. multifloræ majores plerumque pleni. Styli connati exserti staminibus breviores, ad R. chinensem spectantes. TYPE: fig. 109, Revue Horticole 1884.

The polyantha rose is common enough to justify a binomial designation rather than the lengthy formula R. chinensis × R. multiflora. A binomial for a hybrid must conform to the rules of nomenclature in the same way as binomials for ordinary species, including Latin diagnosis and selection of a type. The name Rosa polyantha Carriére, Rev. Hort. 1876: 253, applied to this hybrid, is antedated by R. polyanthos Roessig, 1799, and R. polyantha Sieb. & Zucc., 1843 (cf. Rehder, Bibl. Cult. Trees & Shrubs p. 311, 1949). Hence a new name is required, and is supplied above. There is, of course, no barrier to continued use of "polyantha rose" as a common English name.

Fig. 56. A, Solandra Hartwegii. B, Solandra longiflora.

Notes on the Cultivated Solanaceæ
1. Solandra

Gordon P. DeWolf, Jr.

A recent inquiry as to the correct names for the species of Solandra cultivated in Florida has prompted a review of the confusion in nomenclature in the genus. About a dozen names have been published in this taxon of primarily circum-Caribbean woody climbers. Several of these names appear to be synonymous, and several species have recently been confused.

The genus, sometimes incorrectly called Swartzia (a later synonym), is related to Datura, and is distinguished from that genus by its climbing habit, by the aestivation of the corolla (imbricate in Solandra [fig. 57], plicate in Datura), and by the persistent nature of the calyx, though certain of the arborescent Daturas have this character. The specific characters reside in the color of the flowers, the relative length of calyx and corolla, the number of lobes of the calyx, the length of the petioles, and the presence or absence of pubescence.

The name Solandra was published by Swartz in 1787, for a plant from Jamaica. The name is in commemoration of Daniel Carl Solander (1736-82), student of Linnæus, companion and librarian to Sir Joseph Banks. The name Swartzia was proposed by J. F. Gmelin in 1791, for the same plant - indeed, based on Swartz's description. Obviously, then, the later name is only a synonym and illegitimate under our present code of nomenclature.

Solandra grandiflora, the type species of the genus, as noted above, was first found in Jamaica. It has subsequently been recorded from Puerto Rico, Guadaloupe, Martinique, St. Vincent, and St. Thomas. It is a coarse vine, to 10 m. or more long. It is glabrous, the petioles of the leaves are 12 - 20 mm. long, the blades elliptic, obovate, acute, 7.5 - 17.5 cm. long. The calyx is tubular, 2-lobed, 5-7.5 cm. long, equalling the narrowed portion of the tube of the corolla. The corolla itself is 10-15 cm. long, the portion above the calyx broadly urceolate, with an expanded limb. The corolla is at first white, turning to yellow on the second day. The flowers are fragrant at night, but scarcely so during the daylight hours.

Solandra longiflora Tussac (fig. 56B) is the name given to plants very similar to S. grandiflora, but native in Cuba and Hispaniola. About the only observable difference is the greater length of the narrowed tube of the corolla, which is twice as long as the calyx.

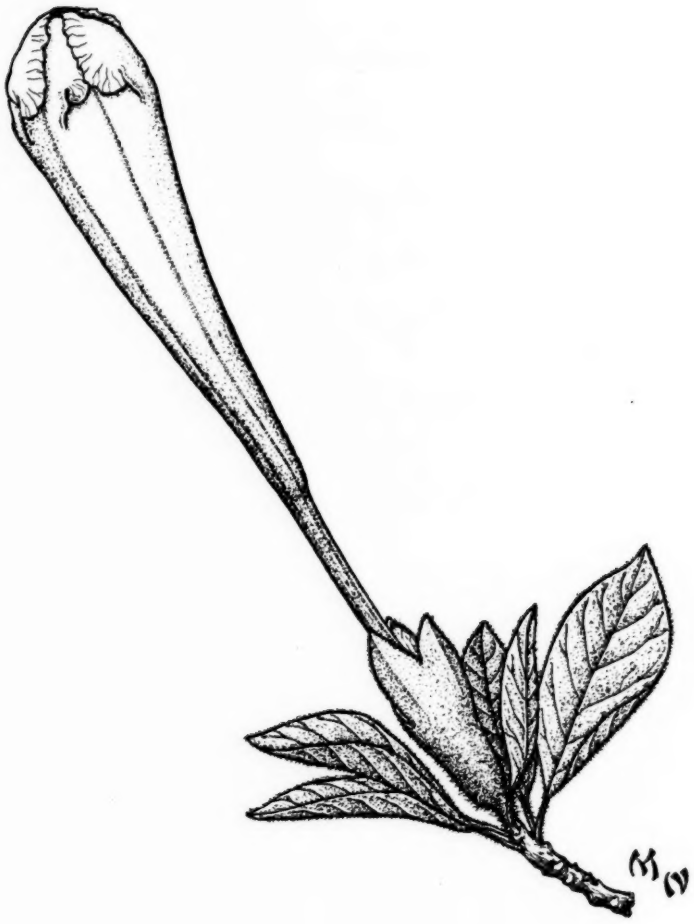

Fig. 57. Solandra brevicalyx: flower in bud, showing imbricate aestivation.

Much of the herbarium material here, labeled S. grandiflora, is referable to this taxon. It has also been called S. lævis.

Another white-flowered species described from Cuban material is S. macrantha Dunal. This apparently differs from S. grandiflora in the longer petioles (up to 4 cm. long), the three-lobed calyx, and the somewhat more open corolla-mouth. The status of this taxon is uncertain, and it is not surely known to be in cultivation in this country.

Finally, a fourth white-flowered species, only recently discovered in Mexico, may be met with in Florida. This is S. brevicalyx Standley (fig. 57), known from the states of Tamallipas and Hidalgo. This is immediately distinguished by the heavy pubescence and by the calyx, which is about 2.5 cm. long, only one-third the length of the narrowed portion of the corolla-tube.

Two species of the genus with yellow flowers are cultivated - or at least, two names are used. Both species involved are natives of Mexico. Solandra guttata is a pubescent species of which I have seen no cultivated material - all the examples bearing this name that I have seen being referable to S. Hartwegii, mentioned below, as is the plant discussed as "S. guttata" by Katherine D. Jones in the "National Horticultural Magazine" vol. 15, pp. 58-61, 1936. Solandra guttata may be recognized by the presence of pubescence, and by the yellow chalice-shaped corolla, spotted and feathered with purple.

The plant which is commonly miscalled S. guttata is assuredly the plant described by N. E. Brown in the "Kew Bulletin" for 1911 as Solandra Hartwegii (fig. 56A). This may be recognized by its being entirely glabrous, with 5 (or more) purple veins, with no spotting or feathering, in the yellow chalice-like corolla. Standley refers this to synonymy with S. nitida Zuccagni, which may very well be correct - but I am keeping them separate until I can examine more material.

Key to the Cultivated Species of Solandra

1. Plants glabrous.
   2. Flowers white, fading to yellow with age.
      3. Petioles more than 2.5 cm. long. . . . . P. macrantha Dunal
      3. Petioles less than 2.5 cm. long.
         4. Calyx about equalling the narrow portion of the corolla-tube. . . . . P. grandiflora Swartz
         4. Calyx about 1/2 the length of the narrow portion of the corolla-tube. . . . . P. longiflora Tussac
   2. Flowers rich yellow. . . . . P. Hartwegii N. E. Brown
1. Plants pubescent.
   5. Flowers white, fading to yellow with age (calyx about 2.5 cm. long). . . . . P. brevicalyx Standley
   5. Flowers rich yellow (calyx about 7.5 cm. long). . . . . P. guttata D. Don ex Lindley

Blumenbachia Hieronymi

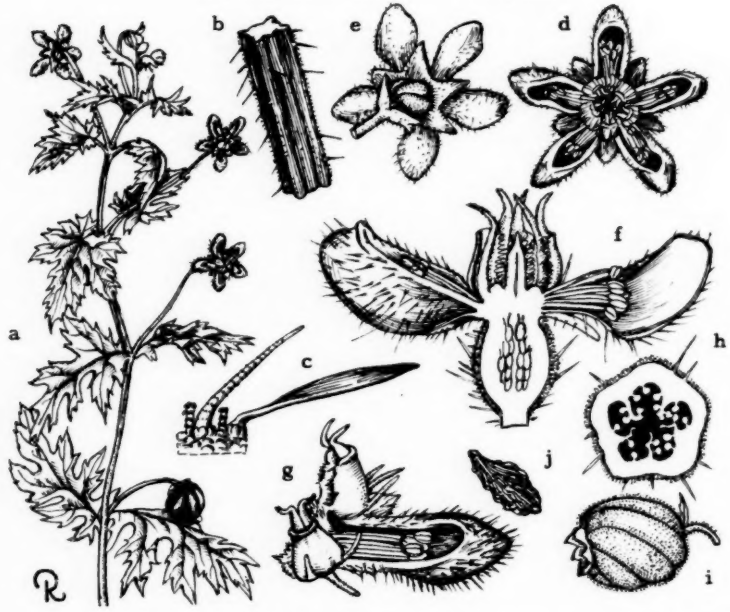

Fig. 58. Blumenbachia Hieronymi: a, habit x 1/4; b, section of stem x 2 1/2; c, stinging hairs x 20; d, flower, face view x 1 1/2; e, same, back view, x 1 1/2; f, flower, vertical section x 3; g, petal with lateral nectar-scales and stamens x 3; h, ovary, cross-section x 5; i, fruit x 4/5; j, seed x 5.

Blumenbachia Hieronymi Urban, pictured above, sometimes passes in the trade as B. insignis (a good species not known to be cultivated). Although a perennial, it is best grown as a tender annual, and is attractive for its beautifully symmetrical flowers, whose white hooded petals are red inside and whose anthers are a bright orange-red. The stems are weak and form mounds of foliage unless trained to a wire netting or low trellis.

The plant is a member of the Loasaceæ, a primarily tropical American family, and, like so many of the species, this one too is provided with an abundance of weakly stinging hairs. One handles it with gloves, although the stinging effect is not long-lasting, as in nettles. The species figured is native of Argentina.

It prefers full sun, flowers abundantly from mid-summer onwards, and is a subject that the seeker of the unusual should consider. Seed has been offered in recent years by Rex Pearce Seed Co., Moorestown, N. J., the only known American source, but it is currently listed by several European sources.

G. H. M. L.

The Term and Category of Cultivar

George H. M. Lawrence

During the last five years, a word unfamiliar to many horticulturists has crept into our terminology. It is "cultivar": a word that denotes both a category and a term. By some it is treated in either instance as an unnecessary evil, one to be ignored, rejected, bypassed; by others it is considered superfluous and meaningless; but for an increasing number - more especially in other countries - it is a very real category, not at all new, and one having biological significance. The category and the term deserve better treatment. For this reason, better understanding of them is needed.

A brief review of this and related categories should help to see all in proper perspective. The species is the basic unit of classification. Its scientific name is written in Latin, and is called a binomial, for it is a name of two words - the generic name, such as Rosa, plus the specific epithet, such as canina, with the binomial expressed as Rosa canina. Species vary. These variants for centuries have been known to English-speaking peoples as varieties. From this usage the botanist created and gave formal designation to a category whose Latin name is "varietas," and which is universally abbreviated "var." Modern botanical nomenclature dates from the time of Linnæus, more specifically from the date of the publication of his two-volume work, "Species Plantarum," in 1753. In that work he recognized the category varietas, but usually prefixed his varieties with letters from the Greek alphabet (such as α, β, γ, etc.) instead of var.

A study of the origins of the plants designated by Linnæus as variants shows more of them to have been of garden than of spontaneous origin. For this, and for other reasons, some horticulturists have held that, if there is a substantial biological difference between the "variety" of botanists and that of gardeners, then priority of usage would leave it with the gardeners, and would place on the botanists the responsibility of finding a new term for their species-variant as it occurs in the wild. The botanists have not done so, and because their literature is so extensive and is the product of formal nomenclatural procedures of long-standing, it is not to be expected that they will. It is best to forget that alternative. If it is agreed that a biological difference does exist between the variety of the botanist and that of the horticulturist, then the horticulturist must seek the new term.

How does the variety differ from the cultivar? In nature, plants are generally populations - that is, groups of individual plants growing together. Different populations may occupy different kinds of habitats and yet may have so many features in common as to be considered components of a single species. If a hypothetical plant species is composed (let us say) of three population-groups occurring in three different habitats - alpine, grassy - meadow, and desert - it may be that each of the three populations has been growing in its area and environment for hundreds of centuries, although originally each migrated to its present area from a common source. Before this migration took place, the characters by which we now recognize the three populations to be a single species were present, and were a part of the genetic makeup. They are heritable characters.

Individuals were able to survive during the period of migration, provided that they were sufficiently different from their ancestors to compete successfully in the new environment. Continuation of this migration required, furthermore, that the new generations be able to compete successfully against all opposition, and to reproduce by seed. By these means the areas that the species occupied expanded and moved outward from the point of origin. Plants not having the vigor and other characters essential for success in the new environments died, and, as they did so, some of the characters of former generations were lost. Many generations of inbreeding, during which the accumulated adaptive characters became more or less fixed by genetic combinations, resulted in changes in the appearance of the plants - changes of sufficient magnitude for the different populations to be recognized as distinct varieties. As the three hypothetical environments (referred to above) became more different, so did the appearance, in some degree, of the three populations.

These different populations of a species are usually capable of interbreeding freely. When they do interbreed, hybrids between them are produced. Similarly, individuals within a population interbreed freely and the population itself is perpetuated. These individual plants are usually as potentially variable in their genetic composition as is one man from another. This variability may be observed in every sexually-reproducing population of wild plants.

Let us assume that the three populations of this hypothetical species grow and flourish, but are unknown to any man until a botanist "invades" the desert area, and on this first trip finds and collects only one of the three populations. He presses and dries it, and makes note of its salient features and location. When he examines his collections later, he finds this plant unlike any known before and, after careful study, correctly concludes it to be a new species, and names it Fiscus aridus. The dried specimen he has prepared becomes the type of the species. The place where it was collected is known as the type station or locality. On a second trip,

the botanist ascends a mountain not far from the arid region of his new species of Fiscus. There he finds the alpine variant of this species. Because it is that same species, it must have the same binomial (Fiscus aridus), but since he considers it to be varietally distinct, a distinguishing epithet must be given it. He names it, then, Fiscus aridus var. alpinus. In order to distinguish the original, desert form from the new var. alpinus, the code of nomenclature specifies that it be called Fiscus aridus var. aridus. Perhaps later the third variant, of the moist meadow habitat, is found and named Fiscus aridus var. aquaticus. Together the three varieties comprise the species.

It is only by chance that the botanist has found the arid-habitat form before the alpine and meadow forms. Biologically, it may be that the last variant occupies an environment more nearly like that of the population that was ancestral to the three, and hence its characters may have changed the least from those of the ancestral form. If so, this is the biological type of the species. Thus we note that the nomenclatural type of a species (in this case, Fiscus aridus var. aridus) may or may not be the biological type. All three compose the species; a description of the species must include the characters of them all.

Before the era when men like Darwin, Mendel, and DeVries established the doctrines of evolution, this biological concept of a species could not exist. Botanists then described the first population encountered as the species, and, while recognizing the later-discovered variants as allied to this species, treated them as appendages, as something to be tacked on to the original species. Thus, the description of the species was not enlarged to include the variants as they were discovered. In most contemporary horticultural literature, including Bailey's "Hortus Second," and the "Manual of Cultivated Plants," the description accompanying the binomial is usually only that of the typical variant of the species - the varieties have been added as appendages. It is only very recently that taxonomic botanists have recognized the biological significance of these matters. It is not yet time to impose similar pedantics on every garden lover. Nevertheless, the informed plantsman should be aware of these things.

The significant feature of the category variety as used by botanists is that it usually designates one of two or more natural populations of a species; individual members of a population interbreed freely with one another and reproduce the population by means of seeds, though among the individuals there may exist a greater variability of characters than is at first apparent.

The plant that a horticulturist calls a variety is usually a product of the garden. It does not represent a self-perpetuating population of wild plants. When grown from seed, it usually represents a selection, chosen for particular attributes, or it is produced by

seed from parents or ancestors that have been selected and bred for particular qualities. In general, it has no counterpart in the wild, nor could it long survive there without reversion to an ancestral type. When grown from a commercial seed packet, one individual does not differ significantly from another because the heritable features have been more or less stabilized for that generation by controlled breeding. It does not represent a freely interbreeding population perpetuating itself for a large number of generations. Furthermore, many - probably most - of the so-called varieties of the garden are perpetuated not by sexual means (i.e., by seed), but by asexual means, such as by cuttings, grafts, or division. These asexually maintained sorts are clones. Like the seed-produced cultivated varieties, they are biologically markedly different from the varieties of the botanist. All of the thousands of cultivated so-called varieties of gladioluses, dahlias, irises, or apples, to mention a few, are clones.

The question arises, if it be agreed that there is a marked biological distinction between the variety of the botanist and that of the gardener or farmer, of why it is necessary to accept two categories. Very frankly, it is not. Botanists, agriculturists, and gardeners have managed for centuries with only the one category, varietas. Even the most sanguine proponents of the category "cultivar" do not expect the man in the street or of the home garden to switch from referring to his flowers as varieties to calling them cultivars. The object of this recognition of the category of cultivar, as being biologically distinct from the variety, is to provide a more precise nomenclature for those persons who require or will use this precision. The category has been recognized among vegetable and seed producers and others in Europe for over half a century. In the Scandinavian, Germanic, and Slavic literature it is designated as "stamm" or "Sorte" or a linguistic variant of those terms. This is true of many listings in European seed catalogues, as well as of those in encyclopedic works. Certainly it is important to know whether a variant will or will not come reasonably true from seed. It is equally important to know whether it must be propagated asexually. This information is indicated by recognition of the distinctness of the category cultivar. The importance of the category to the horticulturist increases with his own increase in plant knowledge. Whether it be appreciated or not by all of us, the category of cultivar is with us. It is entrenched in Europe and the number of adoptions in American literature increases steadily. Its adoption in the International Code of Nomenclature for Cultivated Plants follows a careful study of the situation, and evidences consideration of its recognition and adoption by plantsmen.

The category, by definition, is to be applied to lines highly selected to a standard type, to clones, and to all garden variants which have originated or are maintained in cultivation and which would not usually be given names in Latin form. A clone is a single plant of a cultivar. That is, from a particular cultivar there may be selected any number of clones, or only a single clone may be

named. If the clone is a mutant or sport taken from a wild plant, it automatically becomes a cultivar as soon as it is severed from its "parent" and brought into cultivation. Conversely, some populations that maintain themselves in the wild as botanical varieties may prove to be cultivated subjects by direct transfer to the garden. For these, perpetuated by seed produced by random and free breeding, the category of varietas (variety) is retained. Plants in the garden but of this origin are treated as members of botanical categories. In some genera, the cultivated components of a species may include varieties, cultivars, and clones.

The term to be given this category, now becoming known as "cultivar," has also been challenged. In fact, in one early provisional draft of the present Code it was treated as "hort. var." (horticultural variety). It has been agreed in nomenclatural discussions at the international level that the term must be based on Latin. This ruled out the terms "Sorte" and "stamm." All persons concerned acknowledged the category to represent a cultivated variety. Historically, the term appears to have originated with L. H. Bailey, who wrote in 1923 ("Gentes Herbarum" 1: 113-114):

> The cultigen is a species, or its equivalent, that has appeared under domestication - the plant is cultigenous. I now propose another name, cultivar, for a botanical variety, or for a race subordinate to species, that has originated under cultivation; it is not necessarily, however, referable to a recognized botanical species. It is essentially the equivalent of the botanical variety except in respect to its origin.

Some people in this country have used the term "Hort. form" for this category. It is currently used in some of our government publications. This is admission of the validity of the category. The problem, if there be one, is that of accepting a name. That of cultivar is euphonious. It is free from ambiguity. It serves a purpose.

Material for "Hortus III," following the International Code, is based on the acceptance of the category and of the term cultivar. Likewise, the term clone (abbreviated to cl.) is also used when appropriate. It is in a reference work of this character, or in a check-list of fancy-named plants, that the value of these distinctions are paramount. By examples of this type, the professional horticulturist is provided an added tool for his use. The term is gradually becoming adopted in catalogues of American specialists. There is no reason why producers of general seed or plant catalogues must adopt it. Certainly, the vernacular use of variety is not going to be displaced in the forseeable future. Those wishing to retain it will continue to do so without impeding the gradual increase in preparation and use of a more precise literature. At the same time, we all recognize that a change in the old order is occuring, that this change is being accepted, and that for those who strive to add greater precision to our horticultural literature, this change reflects progress.

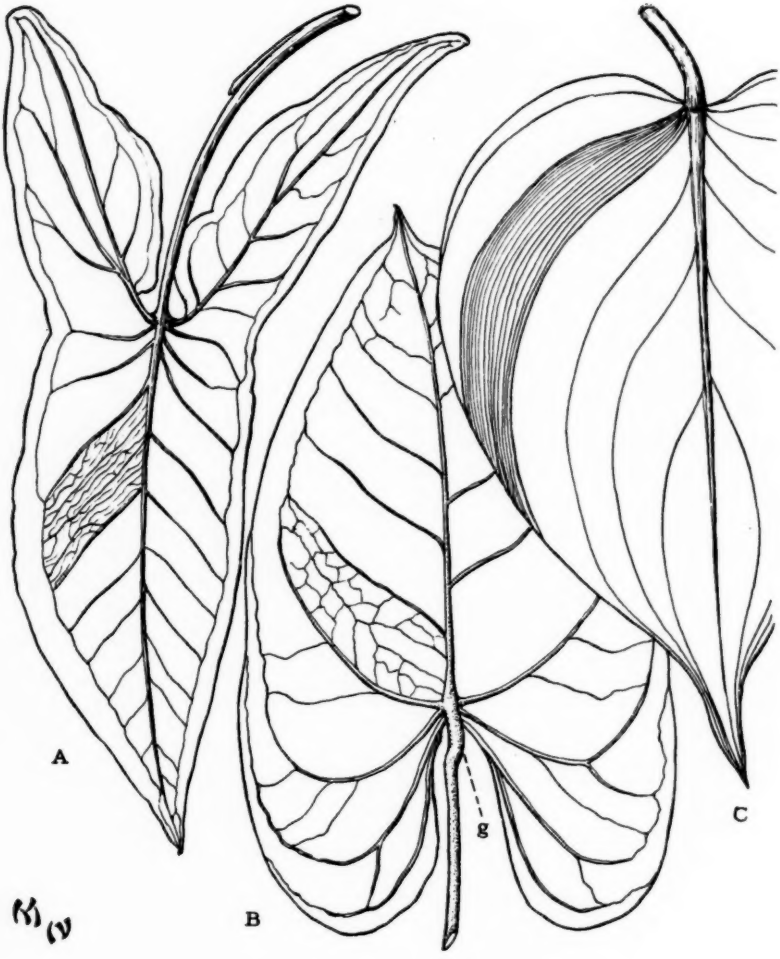

Fig. 59. Ventral (lower) surfaces of typical leaves in three genera of aroids: A, Syngonium; B, Anthurium (geniculum at g); C, Philodendron.

Vining[1] Aroids in Cultivation

George S. Bunting
New York Botanical Garden

The species of vining aroids commonly cultivated today belong to five genera. Of these, Anthurium, Monstera, Philodendron, and Syngonium are indigenous to the American tropics, and are represented in the horticultural trade by many species. The genus Scindapsus, with only two species in cultivation, is native to the Philippines and Indonesia. Much confusion exists in the identity and nomenclature of these aroids, and two other generic names, Nephthytis and Pothos, have been erroneously applied to some of the species of this group.

The genera of Araceæ are discrete taxa, and since the work of H. Schott in "Genera Aroidearum" (1858) they have been clearly defined and characterized on diagnostic features of their inflorescences and flowers; yet, any one of these genera can usually be recognized on the basis of vegetative differences alone. Below is an illustrated key to these five genera, based entirely on vegetative characters.

1. Primary lateral veins of the leaves or leaflets connected by a prominent marginal vein (fig. 59A, B).
   2. Leaves geniculate (fig. 59Bg); sap clear. . . . . Anthurium
   2. Leaves not geniculate (fig. 59A); sap milky. . . . . Syngonium
1. Primary lateral veins of the leaves flowing out nearly to the margin, there becoming indistinct, never connected by a prominent marginal vein (fig. 59C, 60, 61).
   3. Leaves geniculate (fig. 59Bg, 60g, 61g); secondary and tertiary lateral veins commonly reticulate and anastomosing between the primary laterals (fig. 59A and B, 60a, 61a).

[1] Vining, as used here, means that the internodes of the stem are elongated, and that the stem is not strong enough to support itself erect.

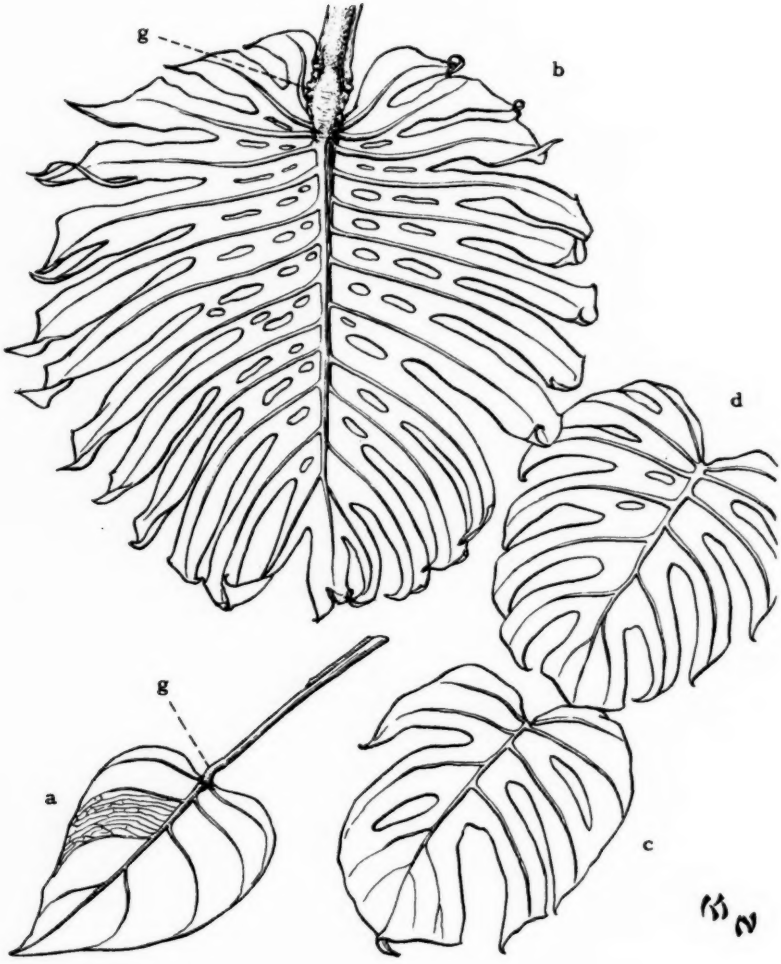

Fig. 60. Monstera deliciosa: a, leaf of juvenile plant, dorsal (lower) surface; b, leaf of mature plant, dorsal surface (geniculum at g); c, d, leaves of intermediate stages, ventral (upper) surfaces.

4. Leaf-blade commonly pinnatifid or perforated (with holes) or both (fig. 60); leaf-blade or petiole with many small, transparent, needle-shaped structures in the tissue (easily observed under low magnification by teasing the tissue parallel to the vascular elements). . . . . Monstera

4. Leaf-blade entire or lobed, never pinnatifid[1] or perforated; leaf blade and petiole without transparent, needle-shaped structures in the tissue.

5. Leaves prominently oblique (one-sided), variegated with yellow, white, or silver (fig. 61); petioles commonly vaginate in their lower half or more (fig. 61b). . . . . Scindapsus

5. Leaves not prominently oblique, solid green; petioles not vaginate, or very shortly vaginate at their bases. . . . . Anthurium

3. Leaves not geniculate; secondary and tertiary lateral veins of the leaf blade more or less parallel between the primary laterals (all lateral veins parallel) (fig. 59C). . . . . Philodendron

Despite the discreteness of these genera, horticulturists and botanists alike have often experienced difficulty in placing species of aroids in the correct genus, and many misnomers have occurred and persisted in common usage up to the present. Much confusion has resulted by application of different generic names to species of the same genus, e.g., Syngonium and Nephthytis. The common Syngonium podophyllum Schott is often sold as Nephthytis liberica, while S. auritum (Linnæus) Schott may be offered for sale under its proper name or as Philodendron auritum. Nephthytis is an African genus of a few species, one of which is rarely seen in botanical gardens, and should never be confused with the American syngoniums. The juvenile leaves of S. podophyllum may suggest the mature leaf form of species of Nephthytis, but the resemblance is superficial.

A similar case exists in Scindapsus. Scindapsus aureus (Lindley and André) Engler is widely known in the trade as Pothos aureus, while another species is offered properly as S. pictus Hasskarl. Pothos is a large genus of Australasia and adjacent Pacific islands, no species of which are in common cultivation. The absence of perianths in the flowers of Scindapsus separate this genus from Pothos.

The most serious example of this kind is the application of the name Philodendron pertusum to the juvenile and other forms of the much-cultivated Mexican Monstera deliciosa Liebmann. This error may lead to even greater confusion than exists today, because a species of northern South America, Monstera pertusa (Linnæus) deVriese, is now in cultivation. This is a handsome species with pinnatifid and perforated leaves, and may be confused by some persons with forms of the better-known M. deliciosa. The obvious similarity of specific epithets in use here could add to this nomen-

[1] Pinnatifid in the adult phase of Scindapsus aureus, a condition occurring only in conservatories or out-of-doors in warm regions.

clatural muddle. Monstera is separated from Philodendron by the presence of a geniculum at the junction of the petiole and leaf-blade, a structure never present in Philodendrons.

A short discussion of each of the five genera included in the key follows.

Anthuriums may be acaulescent to vining depending on the species, and the leaves may be simple and variously margined to palmately compound. One vegetative character common to all is the geniculum. The marginal connecting vein, when present, may flow all around the leaf, or it may arise one-third to one-half of the length above the base of the blade and flow to its apex. The secondary and tertiary lateral veins of the leaf-blade are never parallel to the primaries, but are reticulate and anastomosing. Anthuriums often exhibit a certain coarseness of texture which is helpful in assigning a plant to this genus. Only a few of the cultivated anthuriums are truly vining, but many of them have more or less elongated internodes in age.

Monstera species are probably the most often confused of any group of aroids. They always have a geniculum at the junction of the leaf-blade and petiole, and the commonly seen species are unique in having their leaf-blades pinnatifid, with many holes in the tissue, especially adjacent to the midrib. The primary lateral veins of the leaf-blades are not parallel to one another, and the secondary laterals are always reticulate and anastomosing between the primaries. Some species may be cultivated that have entire leaves. These can be positively identified by the presence of needle-like, transparent structures in the tissues, as described in the key.

The two species of Scindapsus in common cultivation are seen in the North only in their juvenile phase (except in conservatories, etc.) and thus are small plants, with very one-sided, ovate, entire leaves, almost always variegated with yellow, white, or silver in at least some of the leaves of a plant. The geniculum is usually long in these juvenile plants, up to one-half the length of the petiole, and the sheath (vagina) may equal the remainder of the petiole length, or be altogether absent in some leaves.

Only a few species of Syngonium are in cultivation. Some of these species exhibit two phases of growth. The juvenile phase is most commonly seen in the North, with its simple, sagittate, green leaves, or hastate to 3- to 5-foliolate leaves marked with silver or white along the midrib and veins. The adult phase is occasionally produced under home conditions when the environment is ideal for the plant's growth, but usually the 5-9(-13) leaflets of the pedately compound adult leaf are seen only on plants grown in greenhouses or out-of-doors in tropical and subtropical regions. Syngoniums

Fig. 61. Scindapsus aureus: a, dorsal surface of juvenile leaf: geniculum at g, x 4/5; b, long-vaginate petiole, ventral view, x 4/5.

are rather delicate in texture, and yet some species are quite hardy and tolerant of indoor conditions. All species lack a geniculum, have long, vaginate petioles, and milky sap. The primary lateral veins of the leaves or leaflets are connected by a marginal vein. This character, coupled with the absence of a geniculum, serves to separate Syngonium from all other vining aroids in common cultivation.

The greatest number of species of any single genus of aroids in cultivation are the philodendrons. These species are all without a geniculum, and the leaf-blade may be simple and variously margined to trilobate with the lobes pinnatifid. All the lateral veins of the leaf-blade are parallel to one another, and they flow out nearly to the margin, there becoming indistinct, never connected by a marginal vein.

The Arnold Arboretum, in cooperation with the International Committee for Nomenclature and Registration of Cultivated Plants, is endeavoring to compile a list of sources of cultivar names of those groups of plants not known to be represented by special plant societies. Persons knowing of, or possessing, lists of cultivar names of subtropical and tropical plants - fruit trees as well as ornamentals - are asked to advise the Director of the Arnold Arboretum, Jamaica Plain, Mass.

Two Hybrid Episcias

Harold E. Moore, Jr.

In several genera of gesneriads, forms of hybrid origin far exceed the original species in beauty and usefulness as greenhouse or house plants. Until recently, little has been done toward testing the possibilities of hybridization in Episcia.

Episcia cupreata and E. fulgida have been known in cultivation for over a century and for over 75 years, respectively. A third Episcia, E. lilacina, was reintroduced in 1952. Working with these three species at Cornell University, Mr. (now Lt.) Owen M. Rogers was able to secure crosses that have produced progeny of interest and horticultural value.

Studies of breeding behavior are still in process. They cannot be reported on yet but some of the offspring are already being propagated commercially. For that reason, it seems advisable to provide identifying names. Two interspecific hybrids are described here with preliminary comments on the variation among the progeny. In each of these species there are variants of distinct types. Under our present International Code of Nomenclature for Cultivated Plants, all the offspring of a cross between two species must bear the same name and cultivar names should be used to distinguish special forms. These rules are followed in describing the following:

Episcia × Wilsonii new hybrid
[E. cupreata (Hook.) Hanst. ♂ × E. lilacina Hanst. ♀]
Hybrida inter E. cupreatam et E. lilacinam, foliis rugosis superne aeneo-viridibus aut viridibus ad venas argenteo-maculatis inferne rubescentibus aut pallide viridibus, floribus roseis forma inter eos parentium mediis.

Episcia × Wilsonii is a hybrid "species" intermediate between the two parents but in general more robust than either. The ovate to elliptic-ovate or elliptic-obovate leaves measure up to 14 cm. long, 8.5 cm. wide. Blades are thick in texture with wrinkled or embossed upper surface covered with short stiff hairs and a strongly reticulate lower surface with the strongly raised hairy veins forming an intricate pattern. Two general color patterns prevail: in one form the leaves are deep bronzy green with a flecking of silver along the brighter green veins on the upper surface and reddish below; in the other form, the leaves are green with a flecking of silver and paler green about the veins above, and pale green below.

Flowers are intermediate, in size and shape, between the parents or frequently tend to be larger and more nearly the size of flowers in E. lilacina with a broad limb 3.5 cm. wide of prominently toothed lobes. In all instances, the color is distinct from that of either of the parents. The tube (3 cm. long) and back of limb are usually whitish with a flush of pale Rose Bengal (R.H.S. Horticultural Colour Chart, 25/3), the front of the limb Rose Bengal (R.H.S. Horticultural Colour Chart 25/2) shading to a throat of orange-yellow, dotted with rose inside. There is some variation in shading of the color depending on the plant and apparently on the light conditions under which it is grown.

This lovely Episcia has been given the name E. × Wilsonii after Mr. R. G. Wilson of Fantastic Gardens, South Miami, Florida, who, with Mrs. Wilson, has been instrumental in introducing many new gesneriads to the United States and whose interest in Episcia has largely stimulated the writer to a study of the cultivated members of the genus.

The two leaf-variants noted in the description above are both handsome. That with deep bronzy-green leaves has already been introduced by Mr. Wilson as 'Pinkiscia'. Mr. Wilson's original plant was the result of a cross between the same parents, made by Mr. Jack Reark. Material at Cornell is identical and it is proposed that the name Episcia × Wilsonii cultivar 'Pinkiscia' be used for these as well.

A second type, not previously produced, has green leaves of good texture. For this form the name E. × Wilsonii cv. 'Catherine' is proposed to complete the association with both Mr. and Mrs. Wilson.

Episcia × variabilis new hybrid
[E. cupreata (Hook.) Hanst.♂ × E. fulgida (Lindl.) Hook.♀]
Hybrida inter E. cupreatam et E. fulgidam, foliis viridibus vel atroviridibus et argenteo-nervatis, floribus forma et colore inter eos parentium mediis.

Episcia × variabilis has leaves up to 14 cm. long, 9 cm. wide, embossed and short-hairy as in E. fulgida but of three types. Offspring of E. cupreata 'Silver Sheen' × E. fulgida have leaves margined with dark green but with a broad central pattern of pale green similar to 'Silver Sheen', or leaves deep green with a silvery green venation nearly identical with that of E. fulgida. Offspring of E. cupreata 'Viridifolia' × E. fulgida have leaves similar in coloration to 'Viridifolia' or intermediate between the two. Flowers are variable but in shape are intermediate between the parents with the straighter tube and more strongly toothed lobes of E. fulgida, the smaller size, and tendency for stronger orange in the limb, of E. cupreata.

It is too early to tell whether individual clones or variations of E. × variabilis will warrant recognition. For that reason no fancy names are proposed until more complete observations have been carried out.

ASPIDISTRA ELATIOR

Aspidistra elatior Blume is a well-known foliage plant, common as a pot subject in homes, public buildings, and store windows, that has been in cultivation since 1822 in Western countries and for centuries in the Orient. The genus is a native of Asia, and contains 3 or 4 species. That shown below is native to Japan.

It is a member of the Líliaceæ, and is shown here because the query is received often as to why it does not flower. Most specimen plants flower each year, but the flowers are chocolate-brown, arise from the rhizome on a very short pedicel and appear as if growing from the soil. This inconspicuousness of the flowers causes most persons to overlook them. Unlike most members of the Lily family, where the floral parts are usually in multiples of 3, the parts of the Aspidistra flower are arranged in 4's: the ovary has 4 locules, the stamens number 8, and the perianth is of 8 thickened tepals. There is a cultivar 'Punctata' with larger flowers, pale green in color with purple spots inside, and a cv. 'Variegata', the leaves of which are longitudinally striped with ivory-cream.

G. H. M. L.

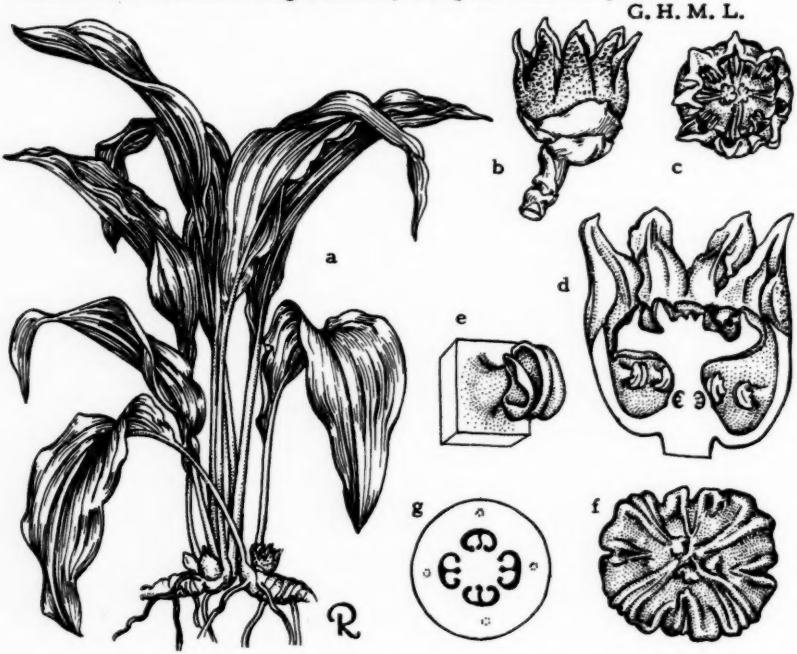

Fig. 62. Aspidistra elatior: a, habit x 1/6; b, flower, side view x 4/5; c, same, face view x 4/5; d, flower, vertical section x 1 1/2; e, stamen x 5; f, stigma x 5; g, cross-section of ovary x 6.

Book Reviews

"Geraniums for Home and Garden" by Helen K. Krauss. 194 pages, colored frontispiece, 16 photoengravure plates. The Macmillan Company, New York, 1955. Price: $5.00.

The wealth of beauty and interest offered us by the genus Pelargonium is being explored and continually expanded by a growing number of collectors and hybridizers. Still, most gardeners with more general interests are even now hardly aware of more than a few color forms of the common bedding geranium. Mrs. Krauss' new book will probably become the vade mecum of the ardent specialist because of its comprehensive treatment of the genus in cultivation, and should broaden the horizons, in respect to this group of plants, for the as yet uninitiated.

The book is divided into three parts. Part I is introductory and includes chapters on geraniums for special purposes, their morphological characteristics, a simple and easily understood explanation of their nomenclature, and a botanical and horticultural history of the genus as a whole.

Part II comprises five chapters, each concerned with a particular horticultural group of geraniums: P. × hortorum, P. peltatum, P. × domesticum, the scented-leaved geraniums, and the "rare and unusual" types. For each group there is a brief general or historical account, followed by a descriptive listing of the species and selected hybrids and other cultivars associated with them. The lists for those grown chiefly for their flowers are divided into color groups, greatly facilitating the search for cultivars to suit one's particular needs or desires. Altogether about 1000 cultivars are named and described.

Part III is concerned with the culture of the plants, including propagation, pruning, hybridization, insects and diseases and their control, as well as the more obvious aspects of the general subject. A list of references, a list of American commercial sources of geranium plants, and an index to the whole work close the volume.

Sixteen photoengravure plates and a colored frontispiece illustrate examples of various types of geraniums. About half of them picture representative portions of nearly 75 scented-leaved or "rare and unusual" species and their hybrids - an aid to the collector in identifying members of the groups concerned, and an "eye-opener" for those not cognizant of the rich variety of flower- and leaf-forms encompassed by this genus.

Readers of "Baileya" will be familiar with Dr. H. E. Moore's articles entitled "Pelargoniums in Cultivation" which have appeared in earlier numbers of this volume. This aspect of his research into the taxonomy and nomenclature of the cultivated species and the cultivars of Pelargonium was prompted in part by problems

raised for his consideration by Mrs. Krauss. While there is a parallel between the conclusions presented in these chapters of her book and those of Dr. Moore's findings, both persons were quick to recognize that the problems themselves were of too technical a nature to be appropriately included in the book. The more detailed studies of the two "Baileya" articles was the natural result.

As commendable as the content of Mrs. Krauss' book is the simple and concise style in which it is written. Popular horticultural works are so frequently overblown in language and idea that it is very pleasant just to be able to read such a book without constantly being affronted by the author's (more frequently, the authoress') whimsical verbal embroidery. Both author and editor deserve to be complimented.

W. J. D.

"Die Laubgehölze" by Gerd Krüssmann. Second Edition, 402 pp., 60 pl. Paul Parey, Lindenstrasse 44-47, Berlin SW 68, Germany. 1951.

This German work provides an alphabetical listing of the species and cultivars of deciduous trees, shrubs, and woody vines hardy in gardens of Germany. Each taxon is provided a very brief description, with usual notes on time of flowering, nativity, and habitat. Although this edition has been known in Europe for the last four years, it is only now becoming known in America.

As a reference work it is not comparable with Rehder's "Manual" nor with Camillo Schneider's older 2-volume German classic, although the author acknowledges much indebtedness to the publications of these two former leaders in the field of dendrology. It is, for the most part, a compilation and does not pretend to be the erudite product of serious taxonomic study. The plates are line-drawings, depicting the author's selection of characters considered diagnostic of the species represented. Cross-references to these plates are given in the respective descriptive accounts.

An original feature of the work is the marginal addition of one to three stars, representing the author's evaluation of the landscape merit of the taxa so designated (one star if good, three if excellent). Perhaps one-fifth of the species and nearly one-third of the cultivars are so evaluated.

Although written in German, the descriptions are of simple construction, easily translated, and this language difference should not be a barrier to use of the book by the serious English-speaking plantsman.

The author is head of the Dortmund Botanical Gardens in Germany, and is editor of "Deutsche Baumschule," a nurseryman's monthly magazine, and currently the official publication of the German Section of the International Dendrological Union.

G. H. M. L.

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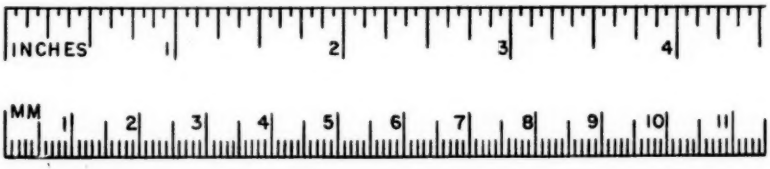
ABBREVIATIONS USED IN BAILEYA

[Excluding abbreviations of author's names following binomials etc.]

ann.	annual	dm.	decimeter	lf.	leaf
bien.	biennial	fl.	flower	lft.	leaflet
br.	branch	fls.	flowers	lvs.	leaves
brt.	branchlet	flt.	floret	mm.	millimeter
caps.	capsule	fr.	fruit	per.	perennial
cl.	clone	ft.	foot	segm.	segment
cm.	centimeter	hort.	horticultural	st.	stem
cv.	cultivar	in.	inch	sts.	stems
diam.	diameter	infl.	inflorescence	var.	variety

METRIC - ENGLISH EQUIVALENTS (approximate)

6 mm. - 1/4 in.	10 cm. - 4 in.	10 mm. - 1 cm.
12 mm. - 1/2 in.	1 dm. - 4 in.	10 cm. - 1 dm.
25 mm. - 1 in.	3 dm. - 1 ft.	10 dm. - 1 meter
2.5 cm. - 1 in.	10 dm. - 1 yd.	
5 cm. - 2 in.	1 m. - 39 in.